U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-258 529

National Emissions Data System (NEDS) Control Device Workbook

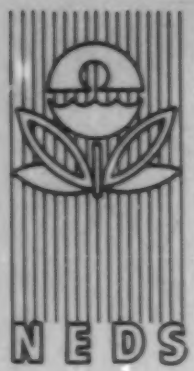
Environmental Protection Agency, Research Triangle Park, N C

Jul 73

272012

PB 258 529

APTD-1570



Library
Environmental Protection Agency
Washington, D. C. 20460

NATIONAL EMISSIONS DATA SYSTEM

CONTROL DEVICE WORKBOOK

U. S. ENVIRONMENTAL PROTECTION AGENCY

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

BIBLIOGRAPHIC DATA SHEET	1. Report No. APTD-1570	2.	3. Recipient's Accession No. PB-258 529
4. Title and Subtitle National Emissions Data System (NEDS) Control Device Workbook			5. Report Date Jul 73 6.
7. Author(s) William M. Vatavuk			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Environmental Protection Agency Research Triangle Park, North Carolina Office of Air and Water Programs			10. Project/Task/Work Unit No. 11. Contract/Grant No.
12. Sponsoring Organization Name and Address			13. Type of Report & Period Covered 14.

15. Supplementary Notes
Supplement to Guide for Compiling a Comprehensive Emission Inventory, rept. no. APTD 1135.

16. Abstracts
Information is presented on the pollutant control devices and methods most commonly used by the majority of the industries, processes, and facilities grouped under the Source Classification Categories as defined by the National Emissions Data System of the Environmental Protection Agency. Data for each category include the name of the source classification category; the source classification code; the control equipment identification number; the mean control device efficiency for particulates, sulfur dioxide, nitrogen oxides, carbon monoxide, and hydrocarbons; the range of observed control efficiencies; and the data source from which the information was obtained. These data are intended to be used in the preparation of emission inventories or other similar studies and do not necessarily reflect the extent of pollutant control at any single facility.

17. Key Words and Document Analysis. 17a. Descriptors
Air pollution abatement,
*Air pollution control,
*Handbooks,
*Air pollution control equipment
Sources,
Classifications,
Coding,
Effectiveness,
Particles,
Sulfur dioxide,
Nitrogen oxides,
Tables(data),
Carbon monoxide,
Hydrocarbons,
Inventories,
Methodology,
Industrial wastes,
Combustion products.

17b. Identifiers/Open-Ended Terms
National emissions data system.

17c. COSATI Field/Group 13 B 7 A

18. Availability Statement National Technical Information Service Springfield, Virginia 22161	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 222p
	20. Security Class (This Page) UNCLASSIFIED	22. Price 7.75/3.00

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P7

APTD-1570

NATIONAL EMISSIONS DATA SYSTEM (NEDS) CONTROL DEVICE WORKBOOK

by

William M. Vatavuk

National Air Data Branch
Monitoring and Data Analysis Division

ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Water Programs
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711
July 1973

1<

The APTD (Air Pollution Technical Data) series of reports is issued by the Office of Air Quality Planning and Standards, Office of Air and Water Programs, Environmental Protection Agency, to report technical data of interest to a limited number of readers. Copies of APTD reports are available free of charge to Federal employees, current contractors and grantees, and nonprofit organizations - as supplies permit - from the Air Pollution Technical Information Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711 or may be obtained, for a nominal cost, from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151.

Publication No. APTD-1570

2<

ABSTRACT

Information is presented on the pollutant control devices and methods most commonly used by the majority of the industries, processes, and facilities grouped under the Source Classification Categories as defined by the National Emissions Data System of the Environmental Protection Agency. Data for each category include the name of the source classification category; the source classification code; the control equipment identification number; the mean control device efficiency for particulates, sulfur dioxide, nitrogen oxides, carbon monoxide, and hydrocarbons; the range of observed control efficiencies; and the data source from which the information was obtained. These data are intended to be used in the preparation of emission inventories or other similar studies and do not necessarily reflect the extent of pollutant control at any single facility. This workbook supplements information presented in the Guide for Compiling a Comprehensive Emission Inventory (APTD-1135).

Key words: emission inventory, control device efficiency

3<

NATIONAL EMISSIONS DATA SYSTEM (NEDS) CONTROL DEVICE WORKBOOK

1. INTRODUCTION

This workbook, which is supplementary to the Guide for Compiling a Comprehensive Emission Inventory (APTD 1135), contains information on the control devices and methods most commonly used by most of the industries grouped under the Source Classification Categories defined by the National Emissions Data System (NEDS). The information, entered on loose-leaf worksheets, contains the following data for each source category:

1. Name of source classification category.
2. Source classification code (SCC); given as an 8-digit number.
3. Control equipment identification number; given as a 3-digit number. (See Table 1).
4. Mean overall control efficiency. When available, this information is listed for control devices and methods for each of the five major pollutants--particulates, sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and hydrocarbons (HC).
5. Range of observed control efficiencies. When available, this information is listed for each control device and appears in parentheses after the mean control efficiency.
6. Data sources. The references from which data were obtained are given as Arabic numerals in the right-hand column on each page. If no number appears, the reference used is Compilation of Air Pollutant Emission Factors (AP-42), which is the first entry under References.

An example will serve to illustrate how these efficiency data are to be used:

At XYZ Corporation, a basic oxygen steel-making furnace (BOF), SCC 3-03-009-03, produces 500 tons (454 megagrams) of steel per hour. The uncontrolled particulate emission factor (from Reference 1) is found to be 46 pounds of particulates per ton of steel produced.

4<

Uncontrolled particulate emission rate = 500 tons/hr x 46 lb/ton
= 23,000 lb/hr
= 11.5 tons/hr (10,400 kg/hr)

A venturi scrubber is installed in the stack, however, to clean the furnace off-gases. Since neither XYZ Corporation nor the appropriate state air pollution control agency has provided any operating parameters for the scrubber, the control efficiency must be obtained from information presented in the control device workbook. As the worksheet indicates, a high-energy wet scrubber (Code 001) used to control a BOF has a representative overall particulate control efficiency of 99.0 percent.

Thus:

Controlled particulate emissions rate =

$$\left[1 - \frac{\text{Control efficiency}}{100\%}\right]\left[\text{Uncontrolled emission rate}\right]$$

controlled particulate emission rate =

$$\left[1 - \frac{99.0\%}{100\%}\right]\left[11.5 \text{ tons/hr}\right] = 0.115 \text{ ton /hr} = 230 \text{ lb/hr (104 kg/hr)}$$

In most cases, the mean efficiencies are taken to be the mid-point (arithmetic mean) of the observed range of values, rounded to the nearest whole percent. Also, in some cases, identification numbers have been listed for control equipment even though the efficiency information for that equipment is not available. For most wet collectors (equipment identification numbers 001 to 003), the name of the device (venturi, spray tower, etc.) is listed in parentheses after the identification number.

Although every attempt has been made to compile the most recent and comprehensive control device information available, this workbook is far from complete. As more data are collected from source tests, research studies, and the literature, worksheets will be added, modified, and deleted. These new worksheets may then simply be inserted in the book in place of the old pages.

It must be emphasized, however, that these efficiencies were taken from published reports and were not developed by the National Air Data Branch. Furthermore, these data are only meant to be used with the preparation of emission inventories and other similar studies and do not necessarily mirror the extent of pollutant control at any single facility. Finally, no attempt has been made to indicate in this workbook the "best" or "worst" control for any source category listed.

A list of the identification numbers and names of the control devices used with NEDS is given in Table 1. For the particulate control devices (wet scrubbers, gravity collectors, centrifugal collectors, and electrostatic precipitators), the efficiency ranges indicated are defined as follows: high, 95 to >99 percent; medium, 80 to 95 percent; and low, <80 percent.

5<

Table 1. CONTROL DEVICES OR METHODS AND THEIR IDENTIFICATION NUMBERS

Equipment identification number	Control device or method
000	No equipment
001	Wet scrubber, high efficiency
002	Wet scrubber, medium efficiency
003	Wet scrubber, low efficiency
004	Gravity collector, high efficiency
005	Gravity collector, medium efficiency
006	Gravity collector, low efficiency
007	Centrifugal collector, high efficiency
008	Centrifugal collector, medium efficiency
009	Centrifugal collector, low efficiency
010	Electrostatic precipitator, high efficiency
011	Electrostatic precipitator, medium efficiency
012	Electrostatic precipitator, low efficiency
013	Gas scrubber (general, not classified)
014	Mist eliminator, high efficiency (>99)
015	Mist eliminator, low efficiency (<99)
016	Fabric filter, high temperature (>250°F or >121°C)
017	Fabric filter, medium temperature (180° to 250°F or 82° to 121°C)
018	Fabric filter, low temperature (<180°F or<82°C)
019	Catalytic afterburner
020	Catalytic afterburner with heat exchanger
021	Direct flame afterburner
022	Direct flame afterburner with heat exchanger
023	Flaring
039	Catalytic oxidation, flue-gas desulfurization
040	Alkalized alumina
041	Dry limestone injection
042	Wet limestone injection
043	Sulfuric acid plant, contact process
044	Sulfuric acid plant, double contact process
045	Sulfur plant
046	Process change
047	Vapor recovery system (including condensers, hooding, and other enclosures)
048	Activated carbon adsorption
049	Filtration system (for example, gravel bed or oil type)
050	Packed gas absorption column
051	Tray-type gas absorption column
052	Spray tower (gaseous control only)
053	Venturi scrubber (gaseous control only)

6<

REFERENCES

1. Compilation of Air Pollutant Emission Factors (Revised). U.S. Environmental Protection Agency (EPA), Office of Air and Water Programs, Research Triangle Park, N. C. Publication No. AP-42. April 1973.

2. A Manual of Electrostatic Precipitator Technology: Part II - Application Areas. Prepared by Southern Research Institute, Birmingham, Alabama, for U.S. EPA Office of Air and Water Programs. Research Triangle Park, N.C. August 1970.

3. Wet Scrubber Handbook (Preliminary Draft). Prepared by Ambient Purification Technology, Riverside, California for U.S. EPA, Office of Air and Water Programs. Research Triangle Park, N. C. January 1972.

4. Beavon, David K. Abating Sulfur Plant Tail Gases. Pollution Engineering: 34-35, January-February 1972.

5. Engineering and Cost Effectiveness Study of Fluoride Emissions Control, Vol. I. Prepared for Office of Air and Water Programs, EPA, Research Triangle Park, N.C. under Contract Number EHSD 71-14. January 1972.

6. Air Pollution Control in the Primary Aluminum Industry, Vol. I. Prepared by Singmaster & Breyer, New York, N. Y., for U.S. EPA, Office of Air and Water Programs, Durham, N. C. March 1972.

7. Kreichelt, T. E., D. A. Kemnitz, and S. T. Cuffe. Atmospheric Emissions from the Manufacture of Portland Cement. U.S. Department of Health, Education, and Welfare, Public Health Service, Cincinnati, Ohio. Publication No. 999-AP-17. 1967.

8. Standards of Performance for New and Substantially Modified Portland Cement Plants. EPA, SSPCP, Standards Development and Implementation Division. Research Triangle Park, N. C. August 1971.

9. Asphaltic Concrete Plants Atmospheric Emissions Study. Prepared by Valentine, Fisher, and Tomlinson, Consulting Engineers, Seattle, Washington, for the Environmental Protection Agency, Research Triangle Park, N. C. under Contract Number 68-02-0076. November 1971.

10. Fabric Filter Systems Study, Vol. II. Appendices to Handbook of Fabric Filter Technology. Prepared by GCA Corporation, Bedford, Mass., for U.S. EPA, Office of Air and Water Programs, Durham, N. C. under Contract Number CPA-22-69-38. December 1970.

11. Schueler, J. A. Gravel Bed Filters for Lime Kilns. (Presented at Convention of National Lime Association. Hershey, Pa. November 1972.)

7<

2. CONTROL DEVICE INFORMATION WORKSHEETS

NOTE: Cardboard dividers or tabs inserted between the source classification sections will permit convenient retrieval of the data.

8<

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 2	0 0 .2	0 3

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV >100 x 10^6 Btu Cyclone

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	35 (30 to 40)					
009	25 (20 to 30)					
010[a]	82 (65 to 99.0)					
016	99.5					10

COMMENTS: [a]High values when used in series with 008.

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	02	002	04

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV >100 x 10^6 Btu Spreader stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	87 (85 to 90)					
009	75 (70 to 80)					
006	25 (20 to 30)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 2	0 0 2	0 5

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV 10 to 100 x 10^6 Btu Over-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

11 ^

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 2	0 0 2	0 6

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV 10 to 100 x 10^6 Btu Under-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III		IV			
1	0	2	0	0	2	0	7

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV 10 to 100 x 10^6 Btu Pulverized, wet

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	70 (65 to 75)					
009	50 (40 to 60)					
010[a]	90 (80 to 99.0)					
016	99.5					10

13A

COMMENTS: [a]High values when used in series with 008.

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 2	0 0 2	0 8

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV 10 to 100 x 10^6 Btu Pulverized, dry

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	70 (65 to 75)					
009	50 (40 to 60)					
010[a]	90 (80 to 99.0)					
016	99.5					10

14<

COMMENTS: [a]High values when used in series with 008.

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	02	002	09

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV 10 to 100 x 10^6 Btu Spreader stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	87 (85 to 90)					
009	75 (70 to 80)					
006	25 (20 to 30)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 2	0 0 2	1 0

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV <10 x 10^6 Btu Over-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

151

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 2	0 0 2	1 1

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV <10 x 10^6 Btu Under-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 2	0 0 2	1 2

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV <10 x 10^6 Btu Pulverized, dry

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	70 (65 to 75)					
009	50 (40 to 60)					
010[a]	90 (80 to 99.0)					
016	99.5					10

18A

COMMENTS: [a]High values when used in series with 008.

SOURCE CLASSIFICATION CODE

I	II	III		IV			
1	0	2	0	0	2	1	3

SOURCE CATEGORY

I External combustion boiler

II Industrial

III Bituminous

IV <10 x 10^6 Btu Spreader stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	87 (85 to 90)					
009	75 (70 to 80)					
006	25 (20 to 30)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0	2	0 0 2 1 4

SOURCE CATEGORY

I External combustion boiler

II Industrial 10

III Bituminous

IV <10 x 10^6 Btu Hand-fired

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

20A

COMMENTS: Same efficiencies assumed as for over- and under-fired stokers.

SOURCE CLASSIFICATION CODE

I	II	III	IV
1 0	3	0 0	1 0 5

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV 10 to 100 x 10^6 Btu Pulverized, wet

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	80 (75 to 85)					
011	~85					
016	99.5					10

21A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 1	0 6

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV 10 to 100 x 10^6 Btu Pulverized, dry

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	80 (75 to 85)					
011	~85					
016	99.5					10

22A

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 1	0 7

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV 10 to 100 x 10^6 Btu Spreader stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	80 (75 to 85)					
011	~85					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 1	0 8

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV <10 x 10^6 Btu Pulverized

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	80 (75 to 85)					
011	~85					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 1	0 9

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV <10 x 10^6 Btu Stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	80 (75 to 85)					
011	~85					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	03	001	10

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV <10 x 10^6 Btu Spreader stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	80 (75 to 85)					
011	~85					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 2	0 5

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV 10 to 100 x 10^6 Btu Pulverized, dry

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	70 (65 to 75)					
009	50 (40 to 60)					
010[a]	90 (80 to 99.0)					
016	99.5					10

COMMENTS: [a]High values when used in series with 008.

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 2	0 6

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV 10 to 100 x 10^6 Btu Pulverized, dry

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	70 65 to 75)					
009	50 (40 to 60)					
010[a]	90 (80 to 99.0)					
016	99.5					10

COMMENTS: [a]High values when used in series with 008.

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	03	002	07

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Anthracite

IV 10 to 100 x 10^6 Btu Over-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

23

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 2	0 8

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Bituminous

IV 10 to 100 x 10^6 Btu Under-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 2	0 9

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Bituminous

IV 10 to 100 x 10^6 Btu Spreader stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	87 (85 to 90)					
009	75 (70 to 80)					
006	25 (20 to 30)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 2	1 0

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Bituminous

IV <10 x 10^6 Btu Over-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	70 (65 to 75)					
009	50 (40 to 60)					
010[a]	90 (80 to 99.0)					
016	99.5					10

A-22

COMMENTS: [a]High values when used in series with 008.

SOURCE CLASSIFICATION CODE

I	II		III			IV	
1	0	3	0	0	2	1	1

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Bituminous

IV <10 x 10^6 Btu Over-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 2	1 2

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Bituminous

IV <10 x 10^6 Btu Under-fired stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
1	0 3	0 0 2	1 3

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Bituminous

IV <10 x 10^6 Btu Spreader stoker

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	87 (85 to 90)					
009	75 (70 to 80)					
006	25 (20 to 30)					
016	99.5					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III			IV		
1	0	3	0	0	2	1	4

SOURCE CATEGORY

I External combustion boiler

II Commercial-institutional

III Bituminous

IV <10 x 10^6 Btu Hand-fired

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
041		50 (40 to 60)				
042		85 (80 to 90)				
039		~90				
008	92 (90 to 95.0)					
009	80 (75 to 85)					
006	37 (25 to 50)					
016	99.5					10

COMMENTS: Same efficiencies assumed as for over- and under-fired stokers.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 0 2	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonia with methanator

IV Purge gas

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
050					99.00	

327

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 0 2	0 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonia with methanator

IV Storage and loading

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
050					99.00	

38

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 0 3	0 1

I Industrial process

II Chemical manufacture

SOURCE CATEGORY

III Ammonia with CO absorber

IV Regenerator exit

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
013, 021					≥99.00	3,1

C3A

COMMENTS: 013 and 021 are used in series to reduce CO to negligible amount.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 0 3	0 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonia with CO absorber

IV Purge gas

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
050					99.00	

40

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 0 3	0 3

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonia with CO absorber

IV Storage and loading

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
050					99.00	

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III		IV		
3	0	1	0	0	5	0	5

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Carbon black

IV Gas or oil furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008[a]	90					
003	70					
016	99.5					
011[b]	91					2
016	99.75 (99.5 to 99.99)					10

525

COMMENTS: [a]When 008 and 003 are used in series, overall efficiency is 97%.

[b]Overall efficiency when preceded by 008.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 0 6	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Charcoal

IV Pyrolysis, distillation

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001	99.00					
019			99.00	99.00	99.00	

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 0 9	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Soap and detergent

IV General spray dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008	85					
008 + 003[a]	92					
008 + 002	95					
008 + 001	97.0					

COMMENTS: [a]Plus sign indicates devices operated in series.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1	0 0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Explosives - TNT

IV Nitration reactors

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
051 (Bubble cap)			92 (90 to 95.0)			

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1	1 0 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Hydrochloric acid

IV Byproduct with scrubber

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
050[a]	99.00					3

COMMENTS: [a]050 controls HCl mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1 3	0 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Nitric acid

IV Ammonia oxidation - new

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
019[a]			89 (78 to 99.00)			
013 (Alkaline)			~90			

COMMENTS: [a] 019 is fired by hydrogen, natural gas or by both.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1 4	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Paint

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
019	~90			99.00		
002 + 049 (Oil filter)	~90					

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1 5	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Varnish

IV Bodying oil, general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
019	~90			99.00		
002 + 049 (Oil filter)	~90					1,3

49>

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1 5	0 2

I Industrial process

II Chemical manufacture

SOURCE CATEGORY

III Varnish

IV Oleoresinous, general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
019	~90			99.00		
002 + 049 (Oil filter)	~90					1,3

50 A

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1 5	0 3

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Varnish

IV Alkyd, general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
019	~90			99.00		
002 + 049 (Oil filter)	~90					1, 3

51

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	01	015	05

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Varnish

IV Acrylic, general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
019	~90			99.00		
002 + 049 (Oil filter)	~90					1, 3

52<

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1 6	0 3

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Phosphoric acid, wet process

IV Condenser

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002[a] (Orifice plate)	90					3
011	94					2

53

COMMENTS: [a] 011, 002 control H_3PO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 1 7	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Phosphoric acid, thermal

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
050	95.5 (92 to 99.00)					
001 (Venturi)	90 (84 to 96.0)					
014[a]						
015[a]						
011	94					2

COMMENTS: [a] No efficiency information available for 014 or 015.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1 0	1 8	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Plastics, polyvinyl chloride

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
017	98.5 (98.0 to 99.00)					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 0	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Printing ink

IV Cooking - general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002 + 019				90		

56A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	1 0	2 0	0 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Printing ink

IV Cooking - oils

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002 + 019				90		

572

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	1 0	2 0	0 3

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Printing ink

IV Cooking - oleoresin

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002 + 019				90		

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 0	0 4

I Industrial process

II Chemical manufacture

SOURCE CATEGORY

III Printing ink

IV Cooking - alkyds

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002 + 019				90		

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 3	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid - contact process

IV 99.7% conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

60>

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 3	0 4

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid - contact process

IV 99.5% conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

61

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0	1	0 2 3	0	6

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid - contact process

IV 99.0% conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

62A

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 3	0 8

I Industrial process

II Chemical manufacture

SOURCE CATEGORY

III Sulfuric acid - contact process

IV 98.0% conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

63A

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 3	1 0

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid - contact process

IV 97.0% conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 3	1 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid - contact process

IV 96.0% conversion

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

65 V

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 3	1 4

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid-contact process

IV 95.0 % conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

69
A

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 3	1 6

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid-contact process

IV 94.0% conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

>67<

COMMENTS: [a]Coversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0	1	0 2 3	1	8

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfuric acid-contact process

IV 93.0% conversion[a]

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97					2
014	88					3
001		97				3

68 A

COMMENTS: [a]Conversion efficiencies ($SO_2 \rightarrow SO_3$). 010 and 014 control H_2SO_4 mist.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 7	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonium nitrate fertilizer

IV Prilling tower, neutralizer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
013 (Recycle)			~95			

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 7	0 3

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonium nitrate fertilizer

IV Prilling tower, dryers and coolers

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Wet cyclone)	70					

<210>

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 7	0 4

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonium nitrate fertilizer

IV Granulator, neutralizer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
013 (Recycle)			~95			

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 7	0 5

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonium nitrate fertilizer

IV Granulator

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Wet cyclone)	~70		~70			

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 7	0 6

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Ammonium nitrate fertilizer

IV Granulator, dryers and coolers

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Wet cyclone)	~70		~70			
009 + 002 (Wet screen)	96.0 (95 to 97.0)		96.0 (95 to 97.0)			

137

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 8	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Normal superphosphate fertilizer

IV Grinders, dryers

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
001 (Venturi + Centrifugal)	96.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 2 8	0 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Normal superphosphate fertilizer

IV Main stack

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
001 (Ejector venturi)	99.00					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 3 0	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Diammonium phosphate fertilizer

IV Dryers, coolers

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
001 (Hydrofilter)	97.0					3

76

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 3	0 2

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Diammonium phosphate fertilizer

IV Ammoniator, granulator

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
002 (Venturi)	91					3
001 (Moving-bed)	97.0					3
002 (Impingement and entrainment)	81					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 1	0 3 2	0 1

SOURCE CATEGORY

I Industrial process

II Chemical manufacture

III Sulfur (elemental)

IV Modified Claus (two stage)

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
045, two catalytic stages[a]		93.5 (92 to 95)				4
045, three catalytic stages		95.5 (95 to 96.0)				4
045, four catalytic stages		96.5 (96.0 to 97.0)				4

COMMENTS: [a]Efficiency of sulfur recovery is a function of number of catalytic converter stages.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 2	0 0 1	0 1

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Alfalfa dehydration

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	~90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 2	0 0 2	0 3

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Coffee roasting

IV Stoner, cooler

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	~70					

V03

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 2	0 0 3	0 1

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Coffee (instant)

IV Spray dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone) + 002						

C1 A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	02	004	01

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Cotton ginning

IV Unloading fan

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008	~90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 2	0 0 4	0 2

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Cotton ginning

IV Cleaner

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008	~90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II		III			IV	
3	0	2	0	0	4	0	3

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Cotton ginning

IV Stick and burr machine

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008	~90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 2	0 0 7	0 5

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Grain processing

IV Barley flour mill

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.90					10

COMMENTS

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	02	007	30

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Grain processing

IV Wheat flour mill

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.90					10

868

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 2	0 1 3	0 1

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Meat smoking

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
003 + 012	67 (65 to 70)					
021	67 (65 to 70)			99.00	99.00	

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 2	0 1 4	0 1

SOURCE CATEGORY

I Industrial process

II Food and agriculture

III Starch manufacture

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
013 (Centrifugal)	97.5 (97.0 to 98.0)					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 0	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Aluminum ore - bauxite

IV Crushing and handling

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
003 (Spray tower)	70					5
003 (Floating bed)	72					5
002 (Quench tower and spray screen)	83					5
010	98.0					5

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 1	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Aluminum ore, electroreduction

IV Prebake cells

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
003 (Floating bed)	72					5
002 (Quench tower and spray screen)	83					5
011	93					2
048 (Dry alumina)	98.0					6
007 (Multiple cyclone)	77					6
001 (Fluid bed scrubber)	98.0					6
001 (Coated filter scrubber)	98.0					6
002 (Spray tower)	80					6
002 (Floating bed)	80					6
002 (Vertical flow, packed bed)	85					6
002 (Chamber scrubber)	85					6

SOA

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	3 0	0 1	0 2

I Industrial process

II Primary metals

SOURCE CATEGORY

III Aluminum ore, electroreduction

IV Horizontal stud soderburg

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
003 (Spray tower)	71					6
003 (Floating bed)	78					6
011	90					2

91A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II		III			IV	
3	0	3	0	0	1	0	3

SOURCE CATEGORY

I Industrial process

II Primary metals

III Aluminum ore, electroreduction

IV Vertical stud Soderberg

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
003 (Floating bed)	72					6
002 (Quench tower and spray screen)	83					5
048 (Dry alumina)	98.0					6
011	90					2
003 (Spray tower)	75					6
001 (Venturi)	96.0					6
007 (Multiple cyclone)	96.0					6
010 (Wet electrostatic precipitator)	96.0					6

92<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	3	0 0	2 0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Aluminum ore, calcining aluminum hydroxide

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
003 (Spray tower)	70					5
003 (Floating bed)	72					5
002 (Quench tower and spray screen)	83					5
010	98.0					5

93A

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 5	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Copper smelter

IV Total-general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97.0 (95.0 to 99.00)					2
013 (Lime slurry) + 043		~90				

S4A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 5	0 2

SOURCE CATEGORY

I Industrial process

II Primary metals

III Copper smelter

IV Roasting

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97.0 (95.0 to 99.00)					2
013 (Lime slurry) + 043		~90				

65A

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 5	0 3

SOURCE CATEGORY

I Industrial process

II Primary metals

III Copper smelter

IV Smelting

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97.0 (95.0 to 99.00)					2
013 (Lime slurry) + 043		~90				
004	99.00					10

96

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 5	0 4

SOURCE CATEGORY

I Industrial process

II Primary metals

III Copper smelter

IV Converting

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97.0 (95.0 to 99.00)					2
013 (Lime slurry) + 043		~90				
004	99.00					10

97 <

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 5	0 5

SOURCE CATEGORY

I Industrial process

II Primary metals

III Copper smelter

IV Refining

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97.0 (95.0 to 99.00)					2
013 (Lime slurry) + 043		~90				

98A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 6	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Ferroalloy, open furnace

IV 50% Ferrosilicon

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	96.0					3
049 (Gravel bed filter)	98.2					11

693

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 6	0 2

SOURCE CATEGORY

I Industrial process

II Primary metals

III Ferroalloy, open furnace

IV 75% Ferrosilicon

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	96.0					3
049 (Gravel bed filter)	98.2					11

160

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 6	0 3

SOURCE CATEGORY

I Industrial process

II Primary metals

III Ferroalloy, open furnace

IV 90% Ferrosilicon

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	96.0					3
049 (Gravel bed filter)	98.2					11

1C1<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 6	0 4

SOURCE CATEGORY

I Industrial process

II Primary metals

III Ferroalloy, open furnace

IV Silicon metal

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	96.0					3

1024

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 6	0 5

SOURCE CATEGORY

I Industrial process

II Primary metals

III Ferroalloy, open furnace

IV Silicomanganese

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	96.0					3

163A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	3 0	0 7	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Ferroalloy, semicovered furnace

IV Ferromanganese

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	98.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 8	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Iron, blast furnace

IV Ore charging

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
006	60					
009 (Dry cyclone)	60					
006 or 009 + 002 (Venturi)	99.00					3
006 or 009 + 002 (Impingement)	95.0					3
006 or 009 + 002 (Spray tower)	97.0					3
011	93					
006 or 009 + 011	99.00					2

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 8	0 2

SOURCE CATEGORY

I Industrial process

II Primary metals

III Iron, blast furnace

IV Agglomerates charging

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
006	60					
009 (Dry cyclone)	60					
006 or 009 + 002 (Venturi)	99.00					3
006 or 009 + 002 (Impingement)	95.0					3
006 or 009 + 002 (Spray tower)	97.0					3
011	93					2
006 or 009 + 011	99.00					

106A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 8	0 3

SOURCE CATEGORY

I Industrial process

II Primary metals

III Iron sintering

IV General (windbox)

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Dry cyclone)	90					
008 + 011	95.0					
011	94					2
008 + 001	99.80					

10/2

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 8	0 3

SOURCE CATEGORY

I Industrial process

II Primary metals

III Iron sintering

IV General (discharge)

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Dry cyclone)	90					
011	94					2
008 + 011	99.50					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 8	0 6

SOURCE CATEGORY

I Industrial process

II Primary metals

III Iron

IV Sand handling

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi) + 001 (Centrifugal)[a]	99.90					3

COMMENTS: [a] Above efficiency holds when both scrubbers are used in series.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 8	0 7

SOURCE CATEGORY

I Industrial process

II Primary metals

III Iron

IV Mold ovens

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Moving bed)	99.00					3

110<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 9	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Steel, open hearth furnace

IV Oxygen lance

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	98.0					2
001 (Venturi)	99.00					3
016	99.00					

111<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 9	0 2

SOURCE CATEGORY

I Industrial process

II Primary metals

III Steel, open hearth furnace

IV No oxygen lance

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	98.0					2
001 (Venturi)	94.5 (85 to 98.0)					1, 3
016	99.50					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 9	0 3

SOURCE CATEGORY

I Industrial process

II Primary metals

III Steel, basic oxygen furnace

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	99.00					3
010	99.00					2
003 (Spray chamber)	70					
016	99.90					10

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II		III			IV	
3	0	3	0	0	9	0	4

SOURCE CATEGORY

I Industrial process

II Primary metals

III Steel, electric arc furnace

IV Oxygen lance

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001	98.0					
010	94.5 (92 to 97.0)					1,2
016	87 (75 to 99.00)					10

114<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 0 9	0 5

SOURCE CATEGORY

I Industrial process

II Primary metals

III Steel, electric arc furnace

IV No oxygen lance

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001	98.0					
010	94.5 (92 to 97.0)					1, 2
016	98.0 (97.0 to 99.00)					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 1 0	0 1

SOURCE CATEGORY

I Industrial process

II Primary metals

III Lead smelter

IV Sintering and crushing

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	96.5 (95.0 to 99.00)					2
016	99.00					
008	85 (80 to 90)					2

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 1 0	0 2

SOURCE CATEGORY

I Industrial process

II Primary metals

III Lead smelters

IV Blast furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	96.5 (95.0 to 99.00)					2
016	99.40 (99.00 to 99.80)					10
008	85 (80 to 90)					2

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 1 0	0 3

SOURCE CATEGORY

I Industrial process

II Primary metals

III Lead smelters

IV Reverberatory furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	96.5 (95.0 to 99.00)					2
016	99.00					
008	85 (80 to 90)					2

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 3	0 3 0	0 2

SOURCE CATEGORY

I Industrial process

II Primary metals

III Zinc smelting

IV Roasting (multiple hearth)

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 1	0 1

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Aluminum

IV Sweating furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	77					
010	99.00					

120A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0	1 0 2

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Aluminum

IV Smelting, crucible furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
010	99.00					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 1	0 3

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Aluminum

IV Smelting, reverberatory furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	70					
012	70					

122

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 1	0 4

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Aluminum

IV Chlorination station

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	95.0					
010	99.00					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 2	0 1

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Brass-bronze melting

IV Blast furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	97.0 (95.0 to 99.00)					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 2	0 2

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Brass-bronze melting

IV Crucible furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	97.0 (95.0 to 99.00)					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 2	0 3

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Brass-bronze melting

IV Cupola furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	97.0 (95.0 to 99.00)					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 2	0 4

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Brass-bronze melting

IV Electric induction

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	97.0 (95.0 to 99.00)					

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 2	0 5

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Brass-bronze melting

IV Reverberatory furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	97.0 (95.0 to 99.00)					

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	4 0	0 2	0 6

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Brass-bronze melting

IV Rotary furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	97.0 (95.0 to 99.00)					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 3	0 1

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Gray iron

IV Cupola furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021					94	
003 (Wet cap)	53					
002 (Impingement)	91					3
001 (Venturi)	96.0					3
011	93 (90 to 97.0)					2
016	99.00					
001 (Flooded disk)	99.00					3

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 4	0 1

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Lead (secondary)

IV Pot furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
001 (Venturi)	99.00					2

131A

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	04	004	02

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Lead smelting (secondary)

IV Reverberatory furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	99.00					3

132<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 4	0 3

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Lead smelting (Secondary)

IV Blast-cupola furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
013 (NaOH)		99.00				
003 (Spray chamber)		49				2
001 (Venturi)	99.00					

133A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 4	0 4

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Lead smelting (secondary)

IV Rotary reverberatory furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	99.00					3

134

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 7	0 1

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Steel foundry

IV Electric arc furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	95.0 (92 to 98.0)					
016	98.5 (98.0 to 99.00)					
001 (Venturi)	96.0 (94.0 to 98.0)					

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 7	0 2

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Steel foundry

IV Open hearth furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97.0 (95.0 to 99.00)					
016	99.00					
001 (Venturi)	97.0 (96.0 to 99.00)					

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 7	0 3

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Steel foundry

IV Open hearth, oxygen lanced

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	96.5 (95.0 to 98.0)					
016	99.00					
001 (Venturi)	96.5 (95.0 to 98.0)					

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 8	0 1

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Zinc (secondary)

IV Retort furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	95.0					3

138

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 8	0 2

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Zinc (secondary)

IV Horizontal muffle furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 8	0 3

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Zinc (secondary)

IV Pot furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	95.0					3

140>

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	04	008	04

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Zinc (secondary)

IV Sweat furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 8	0 5

SOURCE CATEGORY

I Industrial process

II Secondary metals

III Zinc (secondary)

IV Galvanizing kettle

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	95.0					3

142

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 4	0 0 8	0 6

I Industrial process

II Secondary metals

SOURCE CATEGORY

III Zinc (secondary)

IV Calcining kiln

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Venturi)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 1	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Asphalt roofing

IV Blowing operation

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
012	60					
012 + 002	85					
001 (Venturi)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 1	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Asphalt roofing

IV Dipping only

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
012	60					
012 + 002	85					
001 (Venturi)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5 0	0 1	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Asphalt roofing

IV Spraying only

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
012	60					
012 + 002	85					
001 (Venturi)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 1	0 4

SOURCE CATEGORY

I Industrial process

II Mineral products

III Asphalt roofing

IV Dipping and spraying

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
012	60					
012 + 002	85					
001 (Venturi)	95.0					3

< 427

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 05	00	2	01

SOURCE CATEGORY

I Industrial process

II Mineral products

III Asphaltic concrete

IV Rotary dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
006 (Precleaner)	67					9
007 (Cyclone)	96.0					9
007 (Multiclone)	99.90					9
001 (Baffle spray tower)	99.90					9
001 (Orifice type)	99.90					9
001 (Venturi)	99.90					9
001 (Centrifugal)	99.90					9
001 (Spray tower)	99.90					9
016	99.90					9,10

148

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 4	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Calcium carbide

IV Electric furnace

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002 (Wet impingement)						

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	05	005	01

SOURCE CATEGORY

I Industrial process

II Mineral products

III Castable refractories

IV Raw material dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					

150

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 5	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Castable refractories

IV Raw material crusher-processor

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002	94					
009 (Cyclone)	63					

151

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 5	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Castable refractories

IV Electric arc melt

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002	80					
016	98.0					

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 5	0 5

SOURCE CATEGORY

I Industrial process

II Mineral products

III Castable refractories

IV Mold shakeout

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					

153

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II		III			IV	
3	0	5	0	0	6	0	1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Cement (dry)

IV Kilns

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Multicyclone)	80					7,8
010	95.0					7,8
008 + 010	97.5					3
001 (Venturi)	98.0					7, 8, 10
016	99.70 (99.60 to 99.80)	50				

154<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5	0 0	6 0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Cement (dry)

IV Dryers, grinders, etc.

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Multicyclones)	80					
010	95.0					7,8
008 + 010	97.5					7,8
016	99.70 (99.60 to 99.80)	50				7,8,10
049 (Gravel bed filter)	99.80 (99.70 to 99.90)					11

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 05	00	7	01

SOURCE CATEGORY

I Industrial process

II Mineral products

III Cement (wet)

IV Kilns

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Multicyclones)	80					
010	95.0					7,8
008 + 010	97.5					7,8
001 (Venturi)	98.0					3
016	99.45 (99.00 to 99.90)	50				7,8,10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 6	0 6

SOURCE CATEGORY

I Industrial process

II Mineral products

III Cement (dry)

IV Clinker cooler

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
049 (Gravel bed filter)	99.60 (99.00 to 99.90)					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5 0	0 7	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Cement (wet)

IV Dryers and grinder

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Multicyclone)	80					
008 + 010	97.5					7,8
016	99.70 (99.60 to 99.80)	50				7,8,10
010	95.0					7,8
049 (Gravel bed filter)	99.80 (99.70 to 99.90)					11

1-4 58 A

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II		III			IV	
3	0	5	0	0	7	0	6

SOURCE CATEGORY

I Industrial process

II Mineral products

III Cement (wet)

IV Clinker cooler

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
049 (Gravel bed filter)	99.60 (99.00 to 99.90)					11

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 8	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Ceramic clay

IV Drying

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	75					
008 (Multicyclone) + 002	90					11
049 (Gravel bed filter)	99.10					

160>

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 8	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Ceramic clay

IV Grinding

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	75					
008 (Multicyclone) + 002	90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 8	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Ceramic clay

IV Storage

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	75					
008 (Multicyclone) + 002	90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 9	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Clay and flyash sintering

IV Flyash

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	80					
002	90					

163

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 9	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Clay and flyash sintering

IV Clay and coke

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	80					
002	90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 0 9	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Clay and flyash sintering

IV Natural clay

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	80					
002	90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 0	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Coal cleaning (thermal)

IV Fluidized bed dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	70					
008 (Multicyclones)	85					
008 + Water spray	95.0					
001 (Venturi)	99.00					3
001 (Impingement plate)	99.00					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 0	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Coal cleaning (thermal)

IV Flash dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	70					
008 (Multicyclones)	85					
008 + Water spray	95.0					
001 (Venturi)	99.00					3
001 (Impingement plate)	99.00					3

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5	0 1	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Coal cleaning (thermal)

IV Multilouvered dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	70					
008 (Multicyclones)	85					
008 + Water spray	95.0					
001 (Venturi)	99.00					3
001 (Impingement plate)	99.00					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 1	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Concrete batching

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
049 + 002 (Water spray)	90					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 2	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Fiberglass

IV Reverberatory furnace (regenerative exchanger)

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021	50					
049	50					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5	0 1 2	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Fiberglass

IV Reverberatory furnace (recuperative exchar

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021	50					
049	50					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5 0	1 2	0 4

SOURCE CATEGORY

I Industrial process

II Mineral products

III Fiberglass

IV Forming line

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021	50					
049	50					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5	0 1 2	0 5

SOURCE CATEGORY

I Industrial process

II Mineral products

III Fiberglass

IV Curing oven

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021	50					
049	50					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5 0	1 3	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Frit

IV Rotary furnace, general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
003 (Venturi)	67					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 4	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Glass

IV Soda-lime, general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016						

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	05	015	01

SOURCE CATEGORY

I Industrial process

II Mineral products

III Gypsum

IV Raw material dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
008 (Cyclone) + 010	99.00					
010	98.0 (97.0 to 99.00)					2

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5 0	1 5	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Gypsum

IV Primary grinder

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
008 (Cyclone) + 010	99.00					
010	96.0 (94 to 99.00)					2

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 5	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Gypsum

IV Calciner

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
008 (Cyclone) + 010	99.00					
010	99.00 (98.0 to 99.00)					2

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 5	0 4

SOURCE CATEGORY

I Industrial process

II Mineral products

III Gypsum

IV Conveying

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
016	99.00					
008 (Cyclone) + 010	99.00					
010	96.0 (94 to 99.00)					2

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 6	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Lime

IV Primary crushing

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	70					
001 (Venturi)	95.0					3
016	99.00					
001 (Impingement Plate)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5	0 1 6	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Lime

IV Secondary crushing

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	70					3
001 (Venturi)	95.0					
016	99.00					3
001 (Impingement plate)	95.0					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5 0	1 6	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Lime

IV Calcining, vertical kiln

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	70					3
001 (Venturi)	95.0					3
016	99.00					11
001 (Impingement plate)	95.0					
049 (Gravel bed filter)	98.7 (95.0 to 99.90)					

1822

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5 0	1 6	0 4

SOURCE CATEGORY

I Industrial process

II Mineral products

III Lime

IV Calcining, rotary kiln

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	70					
001 (Venturi)	95.0					3
016	99.00					
001 (Impingement plate)	95.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 7	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Mineral wool

IV Blow chamber

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Water scrubber)	60					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II		III			IV	
3	0	5	0	1	7	0	4

SOURCE CATEGORY

I Industrial process

II Mineral products

III Mineral wool

IV Curing oven

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021	50					

165A

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 8	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Perlite

IV Vertical furnace, general

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
009 (Cyclone)	80					
016	96.0[a]					

COMMENTS: [a]Collection efficiency for particles greater than 20 micrometers in diameter.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 1 9	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Phosphate rock

IV Dryer

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone) + 001	97.0 (95.0 to 99.00)					
001 (Cyclonic scrubber)	99.00					3

187<

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0	0 1 9	0 2

SOURCE CATEGORY

I Industrial process

II Mineral products

III Phosphate rock

IV Grinder

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone) + 016	99.00					
001 (Vertical and centrifugal)	96.0					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	05	019	03

SOURCE CATEGORY

I Industrial process

II Mineral products

III Phosphate rock

IV Transfer and storage

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone) + 016	99.00					3
001 (Centrifugal)	99.00					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	5	0 2	0 1

SOURCE CATEGORY

I Industrial process

II Mineral products

III Stone quarrying and processing

IV Primary crushing

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	77 (70 to 85)					
016	99.00					
001 (Moving bed)	99.00					
049 (Gravel bed filter)	99.20					11

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	05	020	02

SOURCE CATEGORY

I Industrial process

II Mineral products

III Stone quarrying and processing

IV Secondary crushing and screening

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	77 (70 to 85)					
016	99.00					
001 (Moving bed)	99.00					3
049 (Gravel bed filter)	99.20					11

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 2 0	0 3

SOURCE CATEGORY

I Industrial process

II Mineral products

III Stone quarrying and processing

IV Tertiary crushing and screening

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	77 (70 to 85)					
016	99.00					
001 (Moving bed)	99.00					3
049 (Gravel bed filter)	99.20					11

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	05	020	04

SOURCE CATEGORY

I Industrial process

II Mineral products

III Stone crushing and processing

IV Recrushing and screening

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	77 (70 to 85)					
016	99.00					
001 (Moving bed)	99.00					
049 (Gravel bed filter)	99.20					11

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 2 0	0 5

SOURCE CATEGORY

I Industrial process

II Mineral products

III Stone quarrying and processing

IV Fines milling

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	77 (70 to 85)					
016	99.00					
001 (Moving bed)	99.00					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 5	0 2 0	0 6

SOURCE CATEGORY

I Industrial process

II Mineral products

III Stone quarrying and processing

IV Screening, conveying, and handling

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
008 (Cyclone)	77 (70 to 85)					
016	99.00					
001 (Moving bed)	99.00					3

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 6	0 0 2	0 1

SOURCE CATEGORY

I Industrial process

II Petroleum industry

III Fluid catalytic cracking unit

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
011	82					
022 (CO boiler)					99.90	

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 6	0 0 2	0 2

SOURCE CATEGORY

I Industrial process

II Petroleum industry

III Moving-bed catalytic crackers

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	96.0					3
022 (CO boiler)					99.90	

1974

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 6	0 0 4	0 1

SOURCE CATEGORY

I Industrial process

II Petroleum industry

III Blow-down system

IV With controls

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
047	98.0					
023	98.0					

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 6	0 0 5	0 1

SOURCE CATEGORY

I Industrial process

II Petroleum industry

III Process drains

IV With controls

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
047				96.0		

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 6	0 0 6	0 1

SOURCE CATEGORY

I Industrial process

II Petroleum industry

III Vacuum jets

IV With controls

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021				99.90		
022				99.90		

200

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 07		0 0 1	0 4

SOURCE CATEGORY

I Industrial process

II Wood products

III Sulfate pulping

IV Recovery boiler

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
010	97.0					2
001 (Venturi)	93					3
050	70					3
003 (Impingement plate)	55					3
002 (Spray and baffles)	85					3
001 (Venturi and baffles)	96.0					3
001 (Impingement and entrainment)	98.0					3

201 ^

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 7	0 0 1	0 6

SOURCE CATEGORY

I Industrial process

II Wood products

III Sulfate pulping

IV Lime kilns

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
002	91					

202

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3 0	7 0	0 1	0 9

SOURCE CATEGORY

I Industrial process

II Wood products

III Sulfate pulping

IV Black liquor oxidation tower

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Moving bed)	96.6					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 9	0 1 0	9 9

SOURCE CATEGORY

I Industrial process

II Metal fabrication

III Electroplating operations

IV

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Packed bed)	94.5 (90 to 99.00) [a]					3

COMMENTS: [a] Control efficiencies apply to the following operations: Precious metal plating, anodizing and stripping, and chrome plating.

SOURCE CLASSIFICATION CODE

I	II	III	IV
3	0 9	0 2 0	9 9

SOURCE CATEGORY

I Industrial process

II Metal fabrication

III Can making

IV Spray coating

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Mechanically aided)	99.00					3

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III		IV	
4	0	1	0 0	1	0 1

SOURCE CATEGORY

I Point source, evaporation

II Cleaning solvent

III Drycleaning

IV Perchloroethylene

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
047				95.0		
047 + 048				97.5 (97.0 to 98.0)		

206

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
4 02	00	1	01

SOURCE CATEGORY

I Point source, evaporation

II Surface coating

III Paint

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
048				90		
021						

>20?<

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
4	0 2	0 0 3	0 1

SOURCE CATEGORY

I Point source, evaporation

II Surface coating

III Varnish and shellac

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
048				90		
021						
002 (Spray)	90					3

208

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II		III		IV		
4	0	2	0	0	4	0	1

SOURCE CATEGORY

I Point source, evaporation

II Surface coating

III Laquer

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
048				90		
021						

209

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
4 02	00 5	0 1

SOURCE CATEGORY

I Point source, evaporation

II Surface coating

III Enamel

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
048				90		
021						

210

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
4	0 2	0 0 6	0 1

SOURCE CATEGORY

I Point source, evaporation

II Surface coating

III Primer

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
048				90		
021						

211

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 1	0 0 1	0 1

SOURCE CATEGORY

I Solid waste

II Government

III Municipal incinerator

IV Multiple chamber

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
006	15 (0 to 30)					
006 + 003 (Water spray)	45 (30 to 60)					
003 (Wetted baffles)	60					
006 or 009	55 (30 to 80)					
002	87 (80 to 95.0)					
010	99.00					2
016	98.0 (97.0 to 99.80)					10

COMMENTS: _____

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 1	0 0 1	0 2

SOURCE CATEGORY

I Solid waste

II Government

III Municipal incinerator

IV Single chamber

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
006	15 (0 to 30)					
006 + 001 (Water spray)	45 (30 to 60)					
001 (Wetted baffles)	60					
006 or 009	55 (30 to 80)					
002	87 (80 to 95)					
010	99.00					2
016	98.0 (97.0 to 99.80)					10

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 2	0 0 1	0 4

SOURCE CATEGORY

I Solid waste

II Commercial - institutional

III Incinerator (general)

IV Conical refuse

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Wet caps)						
003						
010	99.00					2
016	99.60					10

214

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 2	0 0 1	0 5

SOURCE CATEGORY

I Solid waste

II Commercial - institutional

III Incinerator (general)

IV Conical wood

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Wet caps)						
003						

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	02	003	02

SOURCE CATEGORY

I Solid waste

II Commercial - institutional

III Apartment incinerator

IV Flue fed (modified)

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021[a]						
016	99.60					10

2.6-2

COMMENTS: [a]Reduces particulate, CO, and HC emissions.

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 2	0 0 5	0 9

SOURCE CATEGORY

I Solid waste

II Commercial - institutional

III Sewage sludge incinerator

IV General

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Centrifugal)	99.00					3

A 252

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 3	0 0 1	0 4

SOURCE CATEGORY

I Solid waste

II Industrial

III Incinerator

IV Conical refuse

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Wet caps)						
003						
016	99.60					10

2182

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 3	0 0	1 0 5

SOURCE CATEGORY

I Solid waste

II Industrial

III Incinerator

IV Conical wood

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
001 (Wet caps)						
003						

219

COMMENTS:

SOURCE CLASSIFICATION CODE

I	II	III	IV
5	0 3	0 0 3	0 2

SOURCE CATEGORY

I Solid waste

II Industrial

III Auto body incinerator

IV With afterburner

Equipment identification number	Normal efficiency range, %					Data source
	Particulate	SO_2	NO_x	HC	CO	
021	25		80	99.90	99.90	

220<

COMMENTS: